

SECTION 2. BALLOONS

1. GENERAL. This section provides information for use by the inspector during surveillance of balloon operations, and includes safety recommendations from the Balloon Federation of America. Additional guidance concerning balloon competitions and meets is located in volume 2, chapter 49, section 1, paragraph 8.

A. Regulatory Compliance. Balloons are a class of the lighter-than-air category of aircraft, and must be operated and maintained under 14 CFR parts 91 and 43. Balloon pilots must be certificated under 14 CFR part 61. The provisions of 14 CFR part 135, § 135.1(g)(5) exempt balloon sightseeing flights from 14 CFR part 135; these flights are conducted under 14 CFR part 91.

B. Safety Considerations. The following safety considerations should be observed during balloon operations.

(1) When surface winds exceed 7 knots the potential hazards with balloon launch procedures increase exponentially with the increase of wind speed.

(2) Balloon pilots should consider existing and forecast wind directions and velocities when selecting launch sites. If there are trees or obstructions down wind the pilot should ensure that there are adequate distances to permit the balloon to climb above them. **EXTREME CAUTION (INCLUDING TERMINATION OF FLIGHT) MUST BE USED ANYTIME BALLOON OPERATIONS ARE CONTEMPLATED CLOSE TO OR UPWIND OF HIGH TENSION WIRES.**

(3) Before takeoff the pilot should ensure that the ground crew is thoroughly briefed as to their duties during the planned flight.

(4) Under 14 CFR § 91.119(b) and (c), balloon pilots must select appropriate launch and landing sites. Under light or calm wind conditions, these sites might be quite small.

(5) The pilot should ensure that existing and forecast weather conditions are suitable for the planned operations.

(6) The pilot should always be aware of the possibility of becoming becalmed (unable to drift because of lack of wind) over areas offering limited appropriate landing sites. If groundspeed slows, the pilot should consider landing before drifting over those areas.

(7) Balloon pilots must be aware of the potential hazards of operating in areas of wind shear. These potential hazards include abrupt changes in ground speed and/or direction during takeoff or landing, changes in the shape, size, and flight characteristics, even closure of the mouth of the balloon in flight when shear exceeds 15 knots. Balloon pilots must take precautions to avoid wake turbulence and rotor wash of large aircraft.

C. Minimum Safe Altitudes. Title 14 CFR §§ 91.119(a), (b), and (c) apply to all free balloon operations. Except when necessary for takeoff or landing, a balloon may not be operated below an altitude that would permit an emergency landing without undue hazard to persons or property on the surface.

D. Powered Civil Aircraft Equipment and Instrument Requirements. Under 14 CFR § 91.25, balloons are not considered powered aircraft. As used in the 14 CFR, the term “powered” consistently refers to aircraft with horizontal propulsion systems. Minimum equipment for hot air and gas balloons is identified in 14 CFR § 31.85.

2. MOORED BALLOONS. A moored balloon is a balloon that is secured to the earth by several mooring lines and does not carry a person. The mooring lines prevent the balloon from swinging in the wind and keep it in a stationary position (figure 44-2). Moored balloon operations must be conducted in accordance with 14 CFR part 101.

A. Title 14 CFR Part 101.

(1) There are no airworthiness standards for moored balloons operated under 14 CFR part 101 because carriage of passengers aloft was not intended.

(2) Title 14 CFR part 101 was not intended to apply to hot air or gas balloons (aircraft) occupied by passengers and crew and operated under 14 CFR part 91. Title 14 CFR § 101.19 requires an automatic

rapid deflation device on a moored balloon to protect airspace users from a moored balloon that separates from its moorings. An automatic deflation device operates independently of any human input. It must be designed to deflate the envelope if a balloon separates from the mooring. This requirement does not apply to manned balloon operations under 14 CFR part 91.

B. Bungee Jumping. Tethered balloons used for the purpose of bungee jumping must meet all appropriate operational requirements of 14 CFR parts 61 and 91, must be manufactured in accordance with 14 CFR part 31, and must be maintained in accordance with 14 CFR parts 21, 43, and 91. Balloons that have been modified must have an appropriate Supplemental Type Certificate or field approval (FAA Form 337) for the modifications.

3. TETHERED BALLOONS.

A. Free and Tethered Flight Considerations. If a balloon is considered an aircraft under one circumstance (such as free flight), it must still be considered an aircraft under other operating circumstances, including tethered flight. Tethered balloons are considered aircraft, and must be operated in compliance with all the operating, certification, and airworthiness regulations applicable to aircraft.

B. Operational Considerations.

(1) When not in total free flight, a tethered balloon is limited by tether lines (normally three) that allow the balloon a radius of movement around the points of anchor (figure 44-3). The size of this radius

of action depends on the length of the tethers and the strength of the wind.

(2) Operation of a manned, tethered balloon requires essentially the same vertical control skills as those required to operate a free balloon.

(3) A balloon on long tethers (over 150 feet) may create a collision hazard between other aircraft and the tether lines. For night operations, consideration should be given to providing a lighted tether. Where local air traffic control (ATC) service is available, the operator should advise the ATC facility of the presence of the tether lines and balloon.

(4) When a balloon is tethered in Class D airspace, the operator must advise the appropriate ATC facility of the balloon operation.

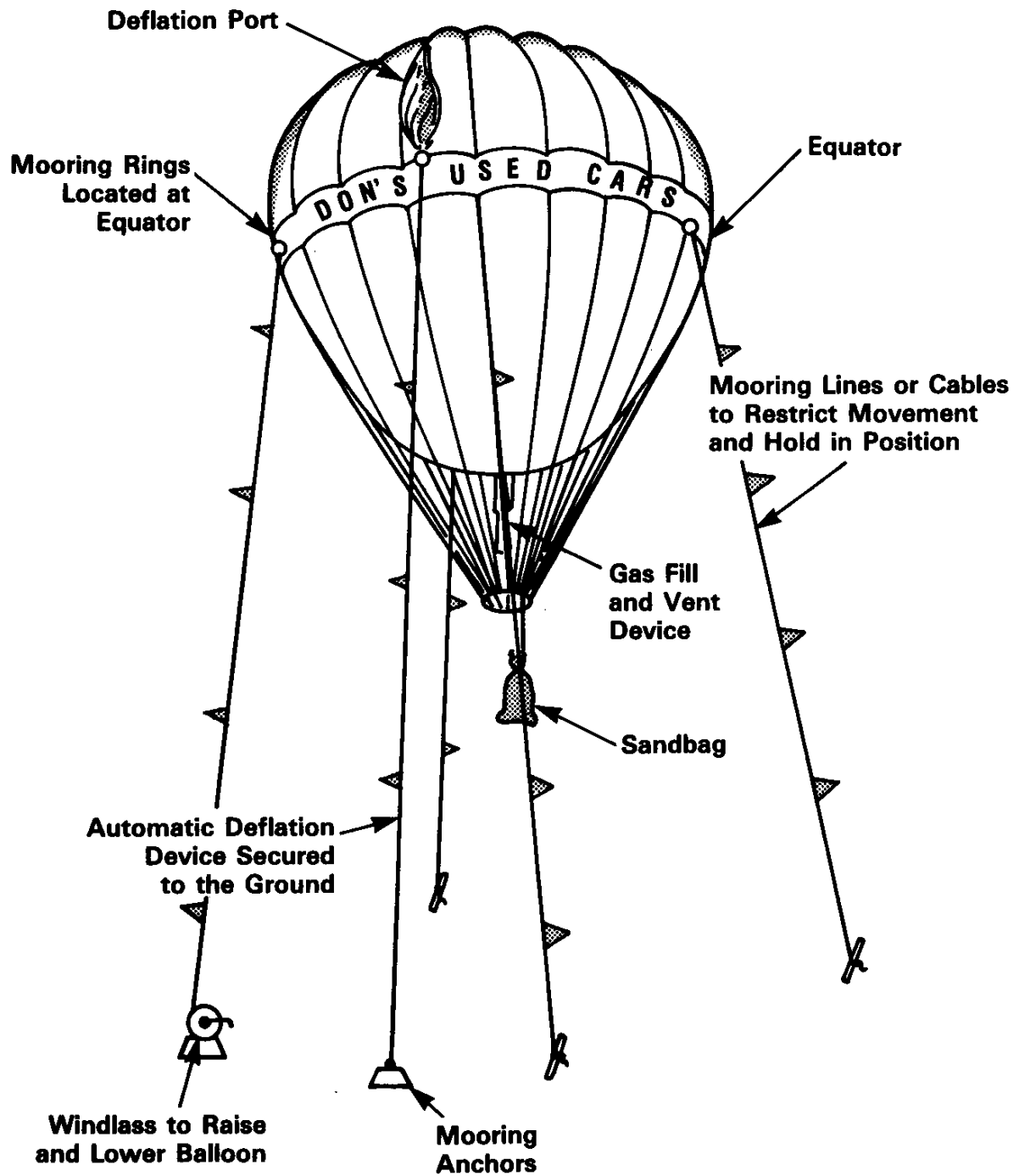
(5) Hot air or gas balloons certificated as aircraft but operated on a tether are not considered moored balloons. Title 14 CFR part 101 does not apply to their operation.

4. GAS BALLOONS. Gas balloons are regulated in the same manner as hot air balloons. However, certification of gas balloon pilots is a unique situation. At present there are no practical test standards (PTS) for initial certification of gas balloon pilots. Examiners and inspectors who conduct initial practical tests for free balloon (gas) pilots should use the applicable portions of the free balloon (with airborne heater) PTS, which are those tasks in the Free Balloon (with airborne heater) PTS that are common to both hot air and gas balloons.

**FIGURE 44-2
MOORED BALLOON**

From Webster's New World Dictionary:

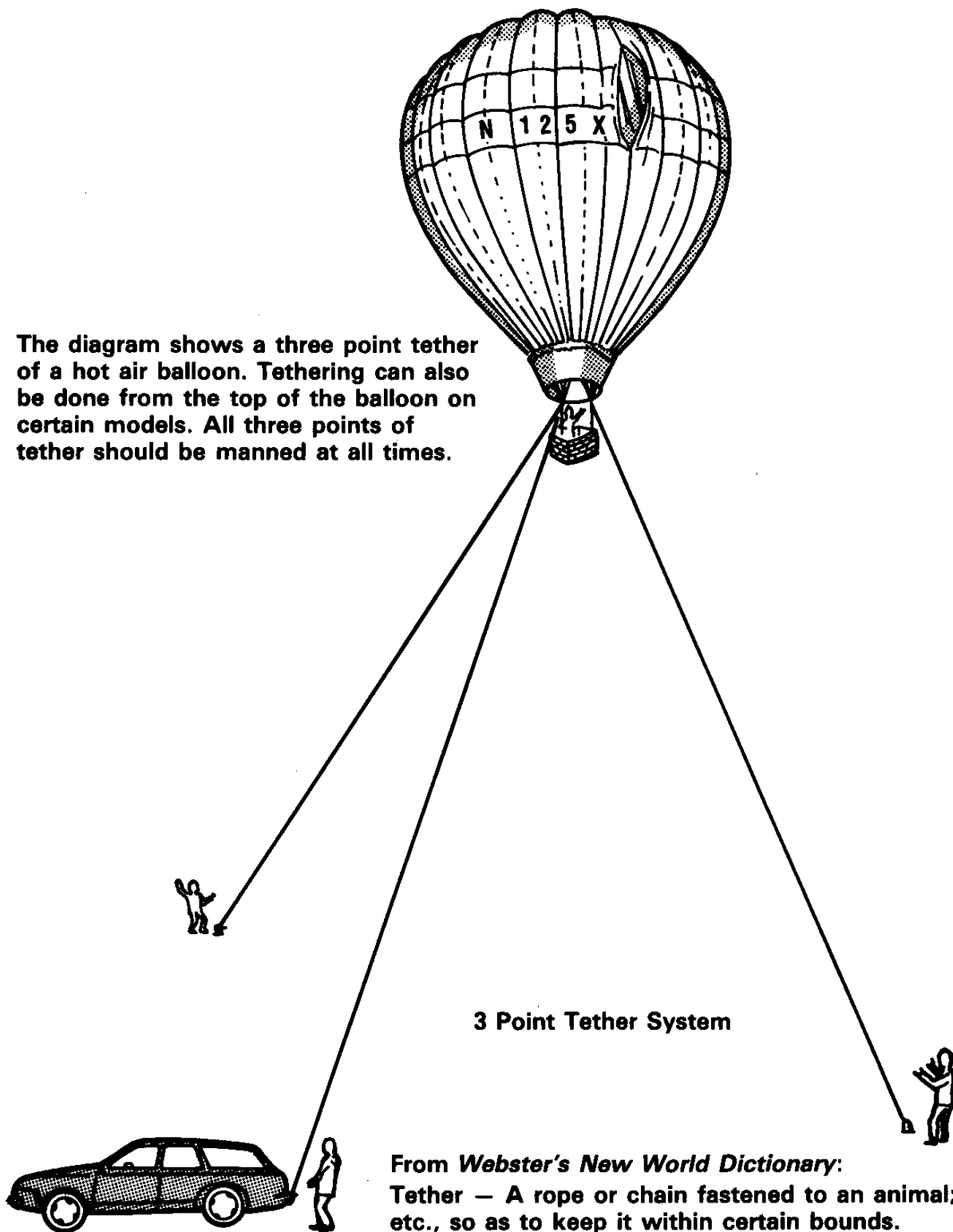
- Moor** — 1. To hold (a ship, etc.) in place by cables or chains fastened on shore, or by anchors, etc.
2. To be held in place; secured, such as by cables or chains.



Note: This operation is subject to 14 CFR part 101.

**FIGURE 44-3
TETHERED BALLOON**

The diagram shows a three point tether of a hot air balloon. Tethering can also be done from the top of the balloon on certain models. All three points of tether should be manned at all times.



Note: This aircraft's operation is subject to 14 CFR part 61, 91, or 43 as appropriate.